**Article title:** Designing Value-Based Dental Benefit Packages: A Multicriteria Decision Analysis in the Netherlands

**Journal name:** International Journal of Health Policy and Management (IJHPM)

**Authors' information**: Ziade Sarroukh[1]*, Patrick Jeurissen[2], Rob Baltussen[2], Shaila Akter[3,1], Jip Janssen[1], Stefan Listl[3,1]

[1]Department of Dentistry, Radboud University Medical Center, Nijmegen, The Netherlands.

[2]Department of IQ Health, Radboud University Medical Center, Nijmegen, The Netherlands.

[3]Heidelberg Institute of Global Health, Section for Oral Health, Heidelberg University Hospital, Heidelberg, Germany.

***Correspondence to:** Ziade Sarroukh; Email: ziade.sarroukh@radboudumc.nl

**Citation:** Sarroukh Z, Jeurissen P, Baltussen R, Akter S, Janssen J, Listl S. Designing value-based dental benefit packages: a multicriteria decision analysis in the Netherlands. Int J Health Policy Manag. 2026;15:9751. doi:10.34172/ijhpm.9751

**Supplementary file 1.** Search Strategy

Based on the most common oral diseases in the Netherlands, the advisory panel selected relevant disease-treatment combinations, as depicted in Table S1, which served as the scope for the search strategy.

**Table S1:** Selected disease-treatment combinations for evaluation

| | Gingivitis | Periodontitis | Caries | Pulpitis | Tooth wear |
|---|---|---|---|---|---|
| *Screening* | | | | | |
| Routine dental checkup | X | X | X | | X |
| *Diagnostics* | | | | | |
| Consultation | X | X | X | X | X |
| X-ray | | X | X | X | X |
| Bacteriological/enzymatic examination | | X | | | |
| Integrated treatment plan | X | X | X | X | X |
| *Treatment* | | | | | |
| Oral hygiene instruction | X | X | X | | X |
| Scaling and polishing | X | X | | | |
| Anesthesia | | X | X | X | X |
| Direct restoration | | | X | X | X |

| | | | | |
|---|---|---|---|---|
| Root canal treatment | | | X | |
| Partial denture | X | | X | X |
| Indirect restoration | | X | X | X |
| Periodontal therapy | X | | | |
| Tooth replacement (bridge/implant) | X | | X | X |
| Tooth extraction | X | | X | X |
| Occlusal splint | | | | X |
| *Aftercare* | | | | |
| Consultation | X | | | X |

*Note: Cells with "X" denote disease-treatment combinations of interest for the comparative assessment.*

Evidence on performance of treatments on decision criteria was first collected through systematic reviews and primary literature, retrieved from Cochrane Library, Medline (PubMed) and Embase (Ovid). The search strategy for the literature review of this study consisted of the disease, intervention, outcome, study design and population of focus:

- Diseases: Gingivitis, periodontitis, caries, pulpitis, tooth wear
- Interventions: Routine dental checkup, consultation, X-ray, bacteriological/enzymatic examination, integrated treatment plan, oral hygiene education instruction, dental cleaning, anesthesia, dental fillings, root canal treatment, partial denture, crown, periodontal treatment, bridges/implants, extraction, occlusal splint, aftercare
- Outcomes: Efficacy, quality of life, safety
- Study design: Systematic review, clinical study, cohort studies
- Population: To specify study population, we add a restriction that removes papers exclusively about children and adolescents.

An example of the search strategy for routine dental checkups in each database is shown below:

*Pubmed Medline*

("gingivitis"[MeSH Terms] OR "periodontitis"[MeSH Terms] OR "dental caries"[MeSH Terms] OR "tooth wear"[MeSH Terms] OR "gingivitis"[Tiab] OR "periodontitis"[Tiab] OR "caries"[Tiab] OR "tooth wear"[Tiab]) AND ("diagnostic tests, routine"[MeSH Terms] OR "mass screening"[MeSH Terms] OR "dental check*"[Tiab] OR "dental recall"[Tiab] OR "dental visit*"[Tiab]) AND ("Treatment Outcome"[MeSH Terms] OR "Quality of Life"[MeSH Terms] OR "Patient Safety"[MeSH Terms] OR "efficacy"[Tiab] OR "quality of life"[Tiab] OR "safety"[Tiab]) AND ("systematic review"[Publication Type] OR "clinical study"[Publication Type] OR "observational study"[Publication Type]) AND (medline[Filter]) NOT (("infant"[mesh] OR "child"[mesh] OR "adolescent"[mesh]) NOT "adult"[mesh])

*Ovid Embase*

| # | search terms |
|---|---|
| 1 | exp gingivitis/ or exp periodontitis/ or exp dental caries/ or exp tooth wear/ or "gingivitis".ti,ab. or "periodontitis".ti,ab. or "caries".ti,ab. or "tooth wear".ti,ab. |
| 2 | exp diagnostic tests, routine/ or exp mass screening/ or "dental check$".ti,ab. or "dental recall".ti,ab. or "dental visit$".ti,ab. |
| 3 | exp quality of life/ or "quality of life".ti,ab. or exp patient safety/ or "patient safety".ti,ab. or exp efficacy/ or "efficacy".ti,ab. |
| 4 | systematic review/ or clinical study/ or observational study/ |
| 5 | 1 and 2 and 3 and 4 |
| 6 | limit 5 to embase |
| 7 | limit 6 to (embryo <first trimester> or infant <to one year> or child <unspecified age> or preschool child <1 to 6 years> or school child <7 to 12 years> or adolescent <13 to 17 years>) |
| 8 | 6 not 7 |

*Cochrane Library*

| # | search terms |
|---|---|
| 1 | MeSH descriptor: [Gingivitis] explode all trees |
| 2 | MeSH descriptor: [Periodontitis] explode all trees |
| 3 | MeSH descriptor: [Dental Caries] explode all trees |
| 4 | MeSH descriptor: [Tooth Wear] explode all trees |
| 5 | gingivitis:ti,ab |
| 6 | periodontitis:ti,ab |
| 7 | (dental caries):ti,ab |
| 8 | (tooth wear):ti,ab |
| 9 | MeSH descriptor: [Diagnostic Tests, Routine] explode all trees |
| 10 | MeSH descriptor: [Mass Screening] explode all trees |
| 11 | (dental check*):ti,ab |
| 12 | (dental recall):ti,ab |
| 13 | (dental visit*):ti,ab |
| 14 | MeSH descriptor: [Treatment Outcome] explode all trees |
| 15 | MeSH descriptor: [Quality of Life] explode all trees |
| 16 | MeSH descriptor: [Patient Safety] explode all trees |
| 17 | efficacy:ti,ab |
| 18 | (quality of life):ti,ab |
| 19 | safety:ti,ab |
| 20 | #1 OR #2 OR #3 OR #4 OR #5 OR #6 OR #7 OR #8 |
| 21 | #9 OR #10 OR #11 OR #12 OR #13 |
| 22 | #14 OR #15 OR #16 OR #17 OR #18 OR #19 |
| 23 | #20 AND #21 AND #22 |
| 24 | MeSH descriptor: [Infant] explode all trees |
| 25 | MeSH descriptor: [Child] explode all trees |
| 26 | MeSH descriptor: [Adolescent] explode all trees |
| 27 | MeSH descriptor: [Adult] explode all trees |

28 #24 OR #25 OR #26
29 #28 NOT #27
30 #23 NOT #29 in Cochrane Reviews, Trials

This search strategy generated 3,606 records, excluding duplicates, for screening. Records were included or excluded based on the criteria shown in Table S2.

**Table S2:** Inclusion and exclusion criteria

| **Inclusion** | **Exclusion** |
|---|---|
| Studies about dental care for adults (18+) | Studies about dental care for children or adolescents exclusively |
| Studies about relevant diseases in any stage of the disease, matching the intervention as shown in Table S1 (gingivitis, periodontitis, caries, pulpitis, tooth wear) | Studies focused on other diseases (e.g. diabetes, cardiovascular disease) |
| Studies about conventional dental services as shown in Table S1 (routine dental checkup, dental examination, x-ray, bacteriologic/enzyme examination, (integrated) treatment plan, dental hygiene instruction, dental cleaning/prophylaxis, anesthesia, filling, root canal treatment, partial dental prothesis, crown, periodontal treatment (scaling and root planing, gum grafting and flap surgery), bridge/implant, extraction, occlusal splint, aftercare). Studies about novel dental services can be included if the study compares the innovation with a control group treated | Orthodontic, cosmetic and pediatric dentistry are excluded. |

| | |
|---|---|
| through conventional treatments without placebo or split mouth designs. | |
| Study design is systematic literature review, clinical study, or observational study. | Split mouth designs and placebo study designs are excluded given potential deviations from conventional treatment. |
| Studies must have clinical efficacy, quality of life, or safety (toxicity, sensitivity, allergy, damage) as an outcome measure. | |